AMENDED SPECIFICATION TEXT INCORPORATING AMENDMENTS IN RESPONSE TO OFFICE ACTION DATED 11/17/2004 FOR SERIAL NO. 10/677,238

The paragraph starting on line 9 of page 7 of the original specification has been amended as follows:

FIG. 25 is a simplified schematic diagram of another arrangement for conducting ultrasound analysis of slurries using a bubble column reactor in accordance with another embodiment of the present invention which is particularly adapted for slurry analysis at high temperatures and pressures; and

The paragraph starting on line 13 of page 7 of the original specification has been amended as follows:

FIG. 26 graphically illustrates the change in the amplitude ratio (A/A_0) of transmitted ultrasonic signals 20" above the gas distributor as a function of gas velocity under two different pressures at 20°C [[;]] .

The paragraph starting on line 7 of page 20 of the original specification has been amended as follows:

FIG. 21 presents the effect of silicon metal (wt.%, solid/liquid) on transit time (t_t) of the transmitted ultrasonic signal in the reactor at a constant temperature of 250°C , a constant stirring speed (800 rpm) and with a nitrogen flow of 2.5 liter/min. The transit time was approximately 159.3 μs in the absence of any silicon metal in the reactor. The introduction of 10 wt.% of silicon metal increased the transit time to 159.8 μs. Subsequently, increasing the concentration of silicon metal to 20 and 30 wt.% led to no further change of the transit time from 159.8 μs. Increasing the concentration of silicon metal to 40 wt.% (volume ratio of 0.22) resulted in the transit time decreasing to 158.7 μs. A further decrease in transit time was observed as the solids concentration increased to 50 wt.%. It was ~~approximately145.4~~ approximately 145.4 μs as the solids concentration reached 50 wt.%. It should be noted that this procedure was conducted when the condenser was installed on the top of the reactor.

The paragraph starting on line 12 of page 21 of the original specification has been amended as follows:

Referring to FIGS. 24a, 24b and 24c, there are shown various sectional views of a coupler 80 for connecting a transducer 100 to an autoclave reactor of the bubble column type for the ultrasound analysis of slurries in accordance with another embodiment of the present invention. The coupler 80 shown in FIGS. 24a, 24b and 24c is particularly adapted for the ultrasound analysis of slurries at high temperatures and high pressures. As in the previously described embodiment, coupler 80 includes a hollow, disc-shaped cooling chamber 82 having a generally circular lateral wall and flat, opposed end walls. Inserted through one of the cooling chamber's end walls is an adapter 88 for connecting the coupler 80 to a bubble column reactor in a sealed manner. Adapter 88 is similar in configuration and construction to adapter 50 shown in FIGS. 3 and 4 and described in detail above. Coupler 80 includes an aperture within the coupling chamber 82 within which is inserted an insert rod 86 as in the previously described embodiment which extends the length of the coupler. The aperture through the insert rod 86 is threaded 98a and indented 98 so as to threadably engage an end of adapter 88 and an end of a transducer 100 for securely positioning the adapter and transducer in intimate end-to-end contact also as in the previously described embodiment. A second, flat end wall of the cooling chamber 82 has a pair of spaced apertures therein within which are threadably inserted a coolant inlet 90 and a coolant outlet 92 which allow a coolant to be circulated through the cooling chamber for removing heat from transducer 100 via insert rod 86. Disposed within the insert rod 86 is an elongated, linear thermowell 94 which is adapted for receiving a thermocouple for measuring the temperature within the insert rod immediately adjacent to transducer 100. An electrical lead 96 is connected to and extends from transducer 100 for providing appropriate input signals to the transducer for generating an ultrasound signal or for transmitting and processing an ultrasound signal received by the transducer.